

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously presented) A radio frequency (RF) signal transmission system, comprising:

a transmission system configured to carry RF signals from a source site to a destination site;

a termination RF load, located at said destination site;

a combining system electrically connected within said transmission system and configured to pass RF signals from said source site, wherein said combining system is located proximate to the a source end of said transmission system, wherein said combining system further comprises a forward directional coupler configured to tap RF signals progressing from said source site, and a reverse directional coupler configured to tap reflected RF signals, and wherein said combining system provides as separate electrical outputs RF signals from said source site and RF signals that have been reflected from loci within said transmission system; and

a test signal source, wherein a test signal from said test signal source is embedded within an RF signal stream fed into said transmission system from said source site.

2. (Previously presented) The RF signal transmission system of claim 1, wherein the test signal from said test signal source is a swept tone within the RF signal stream during a time interval corresponding to a specific horizontal line in an NTSC Television signal stream.

3. (Previously presented) The RF signal transmission system of claim 1, wherein said the test signal from said test signal source is an NTSC analog Ghost Canceling Reference Signal (GCR) pattern waveform used for ghost cancellation at a television receive site.

4. (Original) The RF signal transmission system of claim 1, further comprising a signal processor to identify RF signals reflected back from irregularities within said transmission system.

5. (Previously presented) The RF signal transmission system of claim 1, further comprising a signal processor to identify RF signals reflected back from irregularities within said transmission system, wherein each of the reflected RF signals includes a predetermined, embedded pattern of frequency variation that occurs in a specific line in the blank interval between frames of an NTSC analog television signal, and wherein the pattern within the reflected RF signals occurs at a time coincident at least in part with a pattern that occurred within a previous reflected RF signal.

6. (Previously presented) The RF signal transmission system of claim 1, further comprising a signal processor to identify RF signals reflected back from irregularities within the transmission system structure, wherein each of the reflected RF signals includes a predetermined, embedded pattern of frequency variation that occurs in a specific line in the blank interval between frames of an NTSC analog television signal, and wherein the pattern within the reflected RF signals occurs at a time distinct from any previous reflected RF signal.

7. (Original) The RF signal transmission system of claim 1, further comprising: a data storage medium to capture a record of the response of said transmission system to insertion of a signal source for test; and

a data analysis apparatus to compare a first response by said transmission system to a second response by said transmission system and identify differences between the responses by said transmission system.

8. (Original) The RF signal transmission system of claim 1, further comprising:
a data storage medium to capture an initial record of the response of said transmission system to the presence of normal signals that include a test signal source;
a data storage medium to capture a subsequent record of the response of said transmission system to the presence of normal signals that include a test signal source; and
a data analysis apparatus to compare an initial response of said transmission system to a subsequent response of said transmission system and identify changes in the response of said transmission system over time.

9. (Original) The RF signal transmission system of claim 1, further comprising:
a data storage medium to capture a record of the response of said transmission system to insertion of an RF test signal wherein said RF test signal is a telemetry pattern embedded within an RF signal transmitted by the RF signal transmission system; and
a data analysis apparatus to compare a response of said transmission system to a predetermined response of said transmission system and identify defects in the response of said transmission system.

10. (Original) The RF signal transmission system of claim 1, further comprising a warning system that compares a first characterization of an RF transmission system at a first time to a second characterization of the same line at a second time and generates warning signals if the RF transmission system characterization deviates from the first characterization by an amount that exceeds an established threshold.

11. (Original) The RF signal transmission system of claim 1, further comprising a remote data gathering system that acquires, by telemetry, a first characterization of an RF transmission system at a first time, acquires, by telemetry, a second characterization of the same RF transmission system from the RF transmission system, stores characterization data for subsequent use, and performs such computation as may be required to analyze the physical condition of the RF transmission system and generate warning signals if the RF transmission system characterization deviates from the first characterization by an amount that exceeds an established threshold.

12. (Original) The RF signal transmission system of claim 1, further comprising a remote data gathering system that:

acquires, by telemetry, a first set of characterization data for a multiplicity of RF transmission systems at a first set of times;

stores characterization data for subsequent use;

acquires, by telemetry, a second set of characterizations of the same multiplicity of RF transmission systems at a second set of times;

performs such computation as may be required to analyze the physical condition of the RF transmission systems; and

generates a warning signal at such time as a second RF transmission system characterization deviates from the RF transmission system's first characterization by an amount that exceeds an established threshold.

13. (Previously presented) A combined RF signal transmission and test apparatus comprising:

means for directing an RF signal from an RF signal source to an RF load;

means for producing a test signal embedded within the stream of an RF signal;
means for coupling a forward-directed portion of the RF signal directed from the RF source to the RF load into a means for detecting the test signal;
means for coupling a reflected portion of the RF signal, directed back from a source of reflection within the means for directing, toward the RF source, into the means for detecting the test signal; and
means for comparing times of arrival of the forward-directed and reflected portions of the test signal coupled from the means for directing, within the means for detecting the test signal.

14. (Previously presented) The RF signal transmission and test apparatus of claim 13, further comprising:

means for recording initial propagation characteristics of the means for directing an RF signal;
means for recording subsequent propagation characteristics of the means for directing an RF signal; and
means for comparing recorded characteristics acquired at different times.

15. (Previously presented) The RF signal transmission and test apparatus of claim 13, further comprising means for recording comparisons between recorded characteristics acquired at different times.

16. (Previously presented) The RF signal transmission and test apparatus of claim 13, further comprising means for displaying results of comparisons between recorded characteristics acquired at different times.

17. (Previously presented) The RF signal transmission and test apparatus of claim 13, further comprising means for analyzing differences between recorded characteristics acquired at different times.

18. (Previously presented) The RF signal transmission and test apparatus of claim 13, further comprising means for alerting a user to system discrepancies between recorded characteristics acquired at different times.

19. (Original) A method of testing an RF signal transmission apparatus comprising the steps of:

transmitting an RF signal that includes an integral RF test signal into an RF transmission system;

receiving reflections, if present, of the RF test signal from the RF transmission system with a combining system located proximate to the end of the transmission system at which the transmitter is located;

processing the received reflections to establish a first pattern of time intervals from the original RF test signal to each reflection; and

comparing the first pattern of time intervals of received reflections to a second, predetermined pattern thereof.

20. (Original) The method of testing an RF signal transmission apparatus of claim 19, further comprising the step of storing the first pattern of reflections as a characterization of the transmission system at a point in time.

21. (Original) The method of testing an RF signal transmission apparatus of claim 19, further comprising the step of displaying the first pattern of reflections.

22. (Original) The method of testing an RF signal transmission apparatus of claim 19, further comprising the step of characterizing an RF transmission system in the form of a record of reflection magnitude versus distance as established by the magnitude and location of reflections generated by the line in response to an RF test signal.